

Trend Study 16B-8-97

Study site name: Dairy Fork Burn .

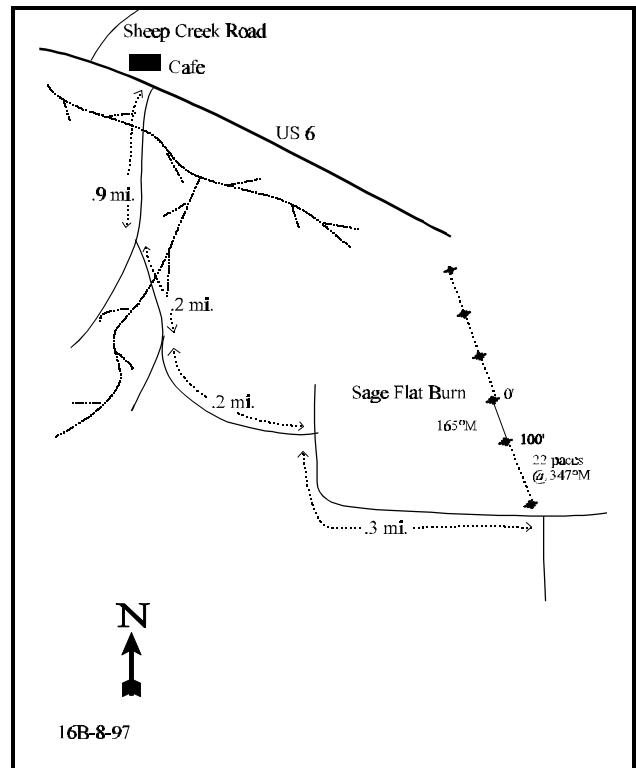
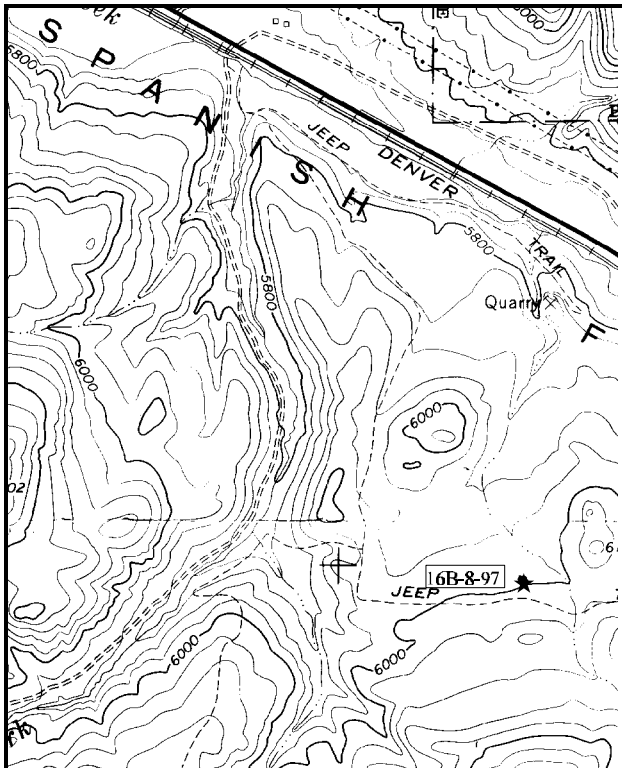
Range Type: Big sagebrush/burn

Compass bearing: frequency baseline 165M degrees.

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Near Sheep Creek Cafe on Highway 6/50, take Dairy Fork Road on the south side of the highway 0.9 miles to a left hand fork. Take this fork, cross the creek and go 0.2 miles to another fork in the road. Take this fork east for 0.2 miles to a sagebrush flat/burn and a three-way intersection. Turn right (south) and follow road around upper edge of flat for 0.3 miles to a junction on the right and a witness post on the left. Stop here and walk north into the flat about 22 paces at an azimuth of 347°M to the 100-foot baseline stake.



Map Name: Mill Fork .

Diagrammatic Sketch

Township 10S, Range 5E, Section Not surveyed

UTM 4422920.713 N, 471997.434 E

## DISCUSSION

### Trend Study No. 16B-8 (28-8)

The East Dairy Fork Burn study samples a sagebrush flat surrounded by juniper. The site has an elevation of 6,000 feet with a gentle slope of 3% to 5% and north aspect. This Division property was burned and seeded in 1988. Sagebrush was largely eliminated within the flat. A 1978 line-intercept transect ran across the lower, north end of the flat, where a disc-chain was used as part of the seedbed preparation. A trend study was established in 1989 to monitor recovery on this big sagebrush (*Artemisia tridentata tridentata*) site. Pellet group data from 1997 indicate a quadrat frequency for elk pellet-groups at 33%, while deer pellet-groups numbered only 9%.

Soil at the site is a moderately deep clay textured soil with a slightly alkaline pH (7.4). Effective rooting depth (see methods) was estimated at almost 14 inches. The high clay content (dense compact soil) limited soil penetrometer readings. Soil temperature was relatively high at nearly 60° F at only 13 inches in depth. Phosphorus may also would be a limiting factor to plant development with only 8 ppm (10 ppm is thought to be minimal). There is a high amount of exposed mineral soil, (38% bare soil in 1989 and 44% in 1997) but erosion is minimal on the study site. Other areas of the flat without herbaceous cover display significant soil movement.

A few mature and young sagebrush survived the treatment. These showed good vigor and light use in 1989. Sagebrush cover in the burned area averaged 2% that year. The surrounding area had 12-15% sagebrush cover. No density plots were established in 1989, but density of sagebrush was estimated in 1997 at 300 plants/acre. Almost two-thirds of the plants were mature with remainder classified as 40% young. Vigor is mostly normal and utilization light. Currently, sagebrush cover averages less the one half of one percent. It should be noted that the dead sagebrush plants listed in the table were the original plant population before the burn treatment. Therefore, the 2,360 plants/acre would have been the population before the treatment.

Musk thistle dominated the treated area in 1989. However, the undesirable weed was infested with a weevil and there was little viable seed. The abundant rosettes (biannual) will begin growth early next year. Native and seeded grasses were diverse but not abundant. By 1997, nested frequency of grasses increased dramatically (95 to 701). Currently, the most abundant perennial grasses include crested wheatgrass, intermediate wheatgrass, smooth brome, and bottlebrush squirreltail which accounts for 89% of the grass cover. Nested frequency of forbs declined due to a significant reduction in the frequency of musk thistle, prickly lettuce, timber poison vetch, and Douglas chaenactis. A few of the seeded forbs are still present (small burnet and alfalfa).

### 1989 APPARENT TREND ASSESSMENT

Trend is up as the sagebrush and native and seeded perennials reoccupy the treated flat. The soil trend will also improve with the expected increase in perennial vegetative cover. Soil erosion is not serious on the study site, and was probably worse before the treatment.

### 1997 TREND ASSESSMENT

The soil trend is considered stable. Percent bare ground increased slightly from 38% to 44% and litter cover declined. Nested frequency of perennial grasses increased 6 fold. Erosion is not currently a problem on the site. Trend for sagebrush appears to be up. Young plants are common, use is light and there are no decadent plants. Trend for the herbaceous understory is up. Sum of nested frequency of grasses increased six fold while nested frequency of forbs declined due to a reduction in undesirable musk thistle and other weedy forbs.

# TREND ASSESSMENT

soil - stable

browse - up for big sagebrush

herbaceous understory - up

## HERBACEOUS TRENDS --

Herd unit 16B , Study no: 8

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover % '97
		'89	'97	'89	'97	
G	Agropyron cristatum	11	*209	6	70	8.24
G	Agropyron intermedium	1	*108	1	38	5.00
G	Bromus inermis	1	*86	1	32	2.21
G	Bromus tectorum (a)	-	132	-	50	.88
G	Dactylis glomerata	9	10	6	4	.09
G	Oryzopsis hymenoides	1	6	1	3	.56
G	Poa fendleriana	1	-	1	-	-
G	Poa pratensis	2	*27	1	10	.53
G	Poa secunda	-	*5	-	5	.12
G	Sitanion hystrix	69	*118	33	52	2.71
Total for Grasses		95	701	50	264	20.38
F	Achillea millefolium	3	4	1	1	.63
F	Alyssum alyssoides (a)	-	6	-	3	.01
F	Astragalus cibarius	3	-	2	-	-
F	Astragalus convallarius	113	*62	53	26	.46
F	Astragalus tenellus	9	5	5	3	.04
F	Camelina microcarpa (a)	-	42	-	21	.13
F	Carduus nutans (a)	230	*106	91	46	3.23
F	Chaenactis douglasii	145	*25	67	11	.05
F	Cirsium spp.	-	3	-	1	.03
F	Comandra pallida	-	*36	-	14	.56
F	Collinsia parviflora (a)	-	2	-	1	.00
F	Descurainia pinnata (a)	-	2	-	1	.00
F	Epilobium paniculatum (a)	-	5	-	2	.01
F	Grindelia squarrosa	6	-	2	-	-
F	Lactuca serriola	217	*32	81	14	.14
F	Machaeranthera canescens	5	-	3	-	-
F	Medicago sativa	-	1	-	1	.03

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover % '97
		'89	'97	'89	'97	
F	Microsteris gracilis (a)	-	58	-	24	.36
F	Penstemon caespitosus	7	13	3	5	.74
F	Phlox longifolia	-	3	-	1	.00
F	Ranunculus testiculatus (a)	-	4	-	1	.00
F	Sanguisorba minor	5	9	4	4	.16
F	Sisymbrium altissimum (a)	-	5	-	3	.01
F	Taraxacum officinale	11	8	3	4	.07
F	Tragopogon dubius	23	*8	13	6	.05
F	Vicia americana	-	*24	-	9	.04
Total for Forbs		777	463	328	202	6.82

\* Indicates significant difference at  $\alpha = 0.10$  (annuals excluded)

#### BROWSE TRENDS --

Herd unit 16B , Study no: 8

Type	Species	Strip Frequency '97	Average Cover % '97
B	Artemisia tridentata tridentata	13	.41
B	Juniperus osteosperma	1	.15
Total for Browse		14	0.56

#### BASIC COVER --

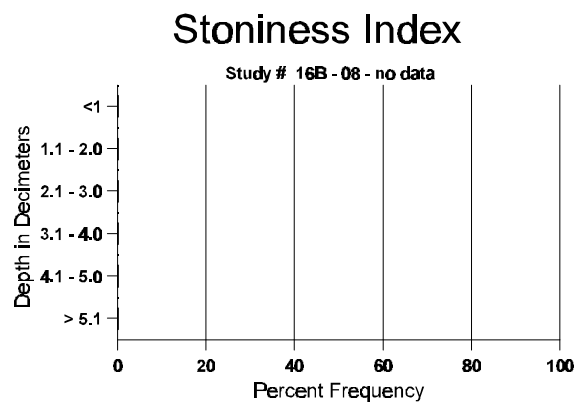
Herd unit 16B , Study no: 8

Cover Type	Nested Frequency '97	Average Cover %	
		'89	'97
Vegetation	351	4.00	32.15
Rock	3	0	.00
Pavement	92	0	.22
Litter	379	58.25	24.80
Cryptogams	5	0	.16
Bare Ground	350	37.75	43.81

# SOIL ANALYSIS DATA --

Herd Unit 16B, Study no: 08

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
13.7	59.0 (13.2)	7.5	25.4	26.8	47.8	2.2	8.0	217.6	.4



# PELLET GROUP FREQUENCY --

Herd unit 16B , Study no: 8

Type	Quadrat Frequency '97
Rabbit	12
Elk	33
Deer	9
Cattle	1

## BROWSE CHARACTERISTICS --

Herd unit 16B , Study no: 8

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata tridentata																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6	
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	97	9	-	-	-	-	-	-	-	-	8	-	1	-	180	49 43	9	
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	2360		118	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%			Appeared							
'97		00%			00%			07%										
Total Plants/Acre (excluding Dead & Seedlings)														'89	0	Dec:	-	
														'97	300		-	
Juniperus osteosperma																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%			Appeared							
'97		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'89	0	Dec:	-	
														'97	20		-	